AES01 – FNAL Vertical Test Summary

Cavity AES01 was tested 3 times at FNAL : 9/7-11/07, 9/18/07, 11/8-9/07

All tests were performed

- w/ fixed input coupler – $Q_{ext\ FPC}$ = 1.6-1.7 x 10^{10} , β ~ 0.8
- at nominal temperature of 2K
- w/o complete magnetic shielding (~ 50mG residual field)
- no re-processing (HPR) between tests

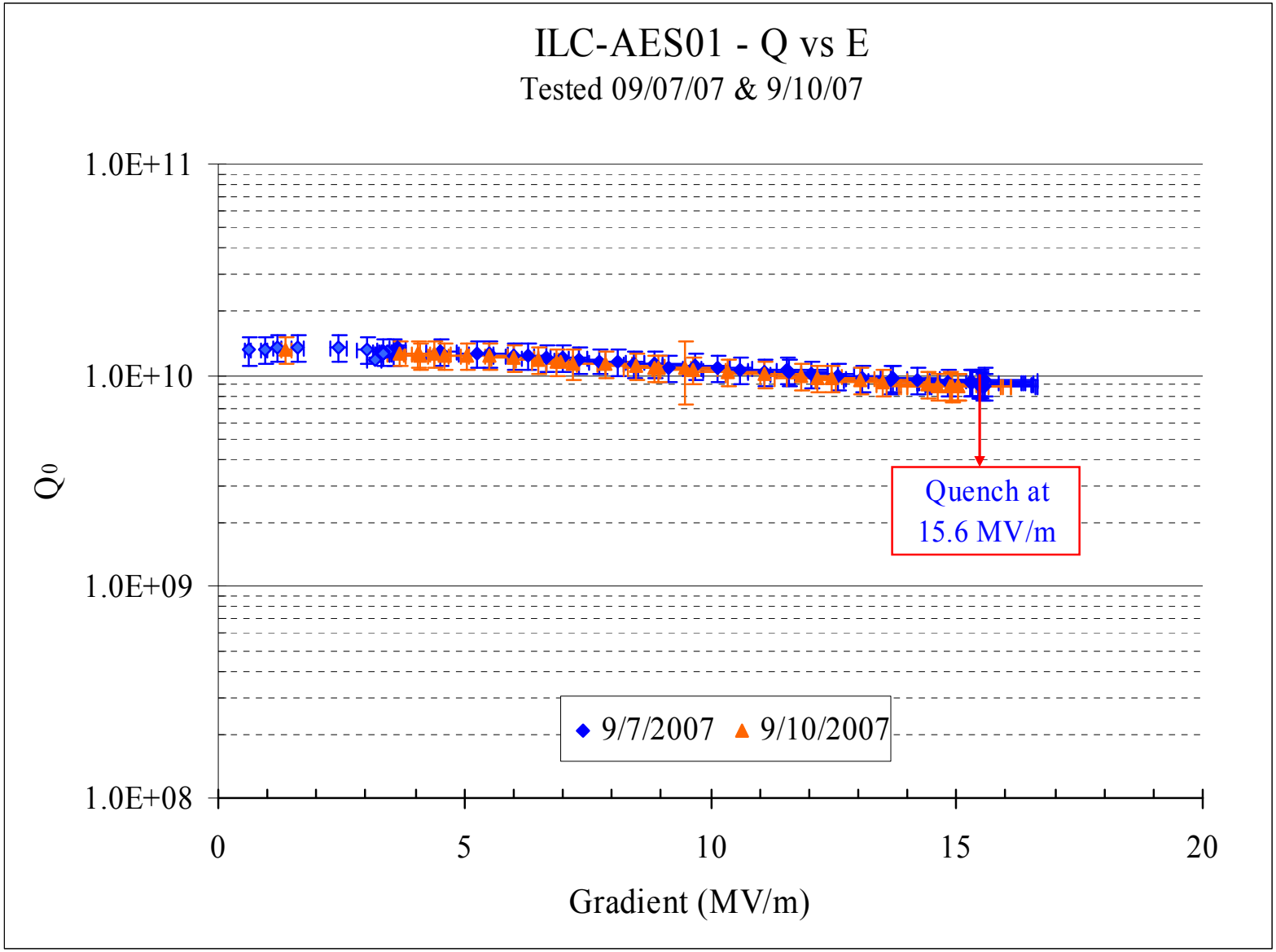
1st test (9/7-11/07) – commissioning of VTS system, 2 bands of 8 RTD's on cells 3 & 7 (cells 3 & 7 identified as suspect cells during JLab tests)

2nd test (9/18-19/07) – quench localization w/ 8 additional "flying" RTD's, mode measurements

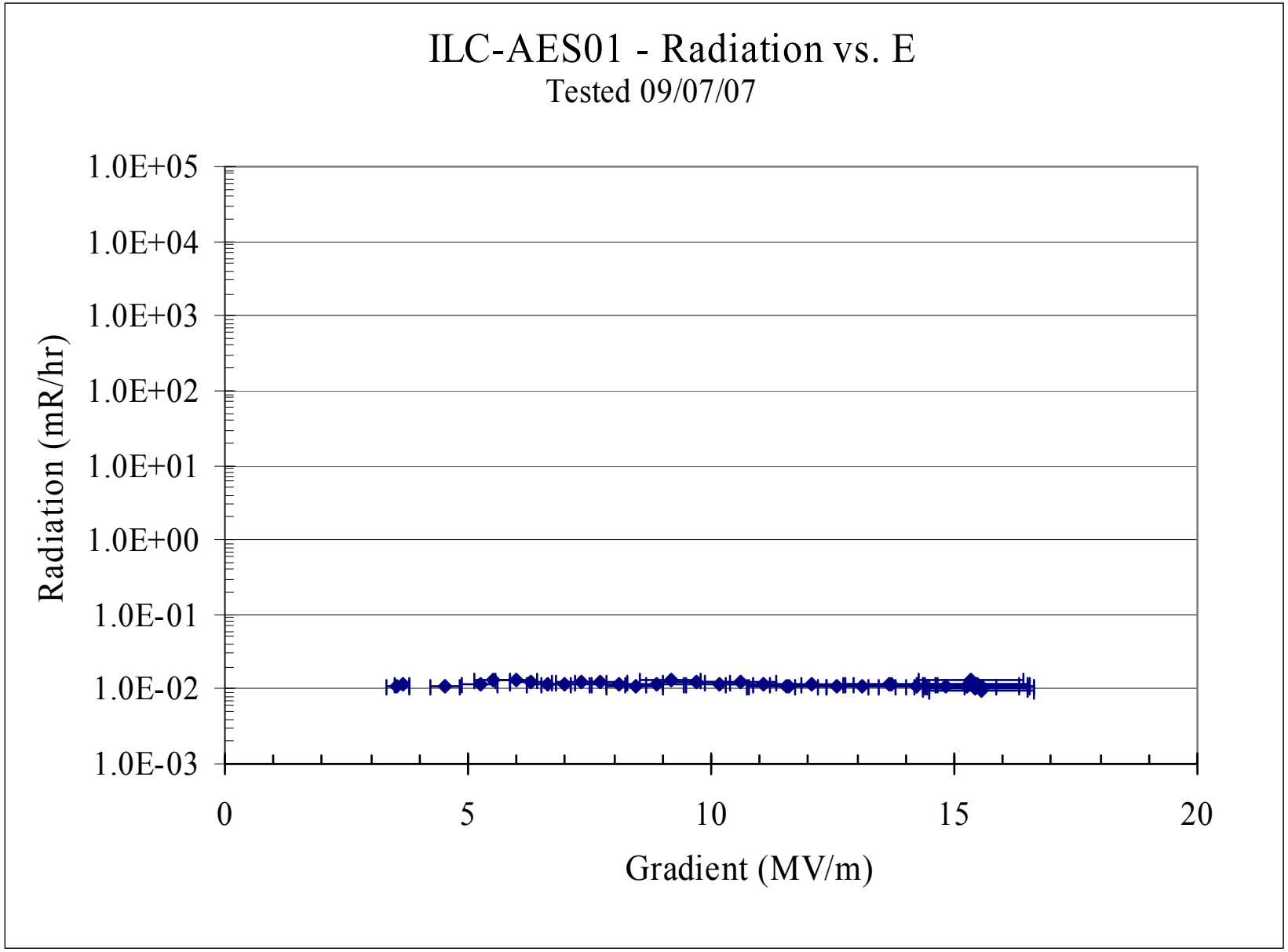
3rd test (11/8-9/07) – continued quench localization, 2 bands of 8 RTD's on cells 2 & 8 (next-lowest performing cells, from mode measurements)

Dmitri will discuss thermometry results in detail…

1st Test Results



1st Test Results



J. Ozelis 12/4/2007

1st Test Summary

- Observed hard quench limit in π-mode (agrees w/ JLab data)
- No FE in π-mode
- Heating seen on cell 7 RTD band during quench (RTD's 5 & 6 – see Dmitri's talk)
- Reproducible system operation

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All tests were performed

- w/ fixed input coupler – $Q_{ext\ FPC}$ = 1.6-1.7 x 10^{10} , β ~ 0.8
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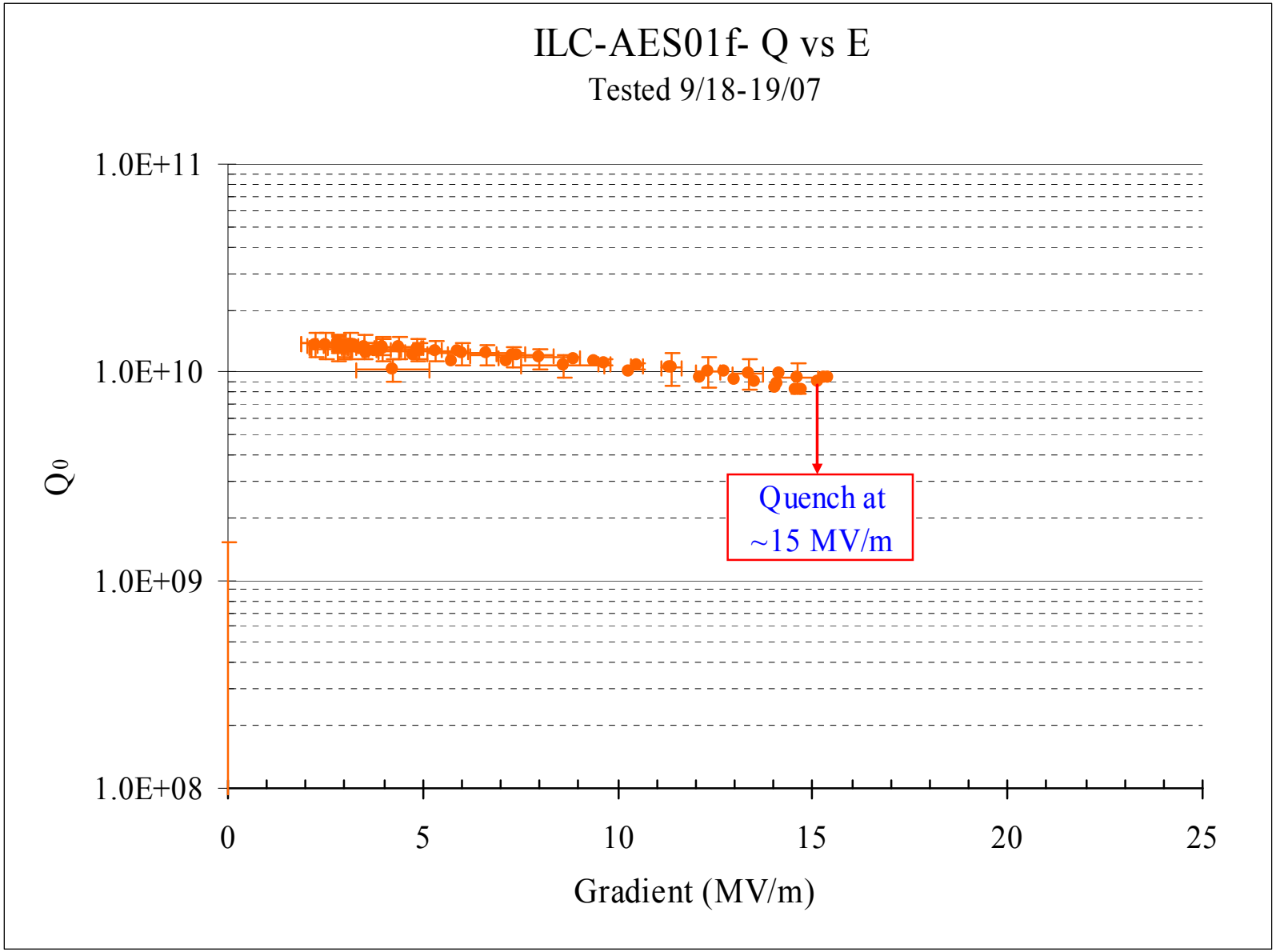
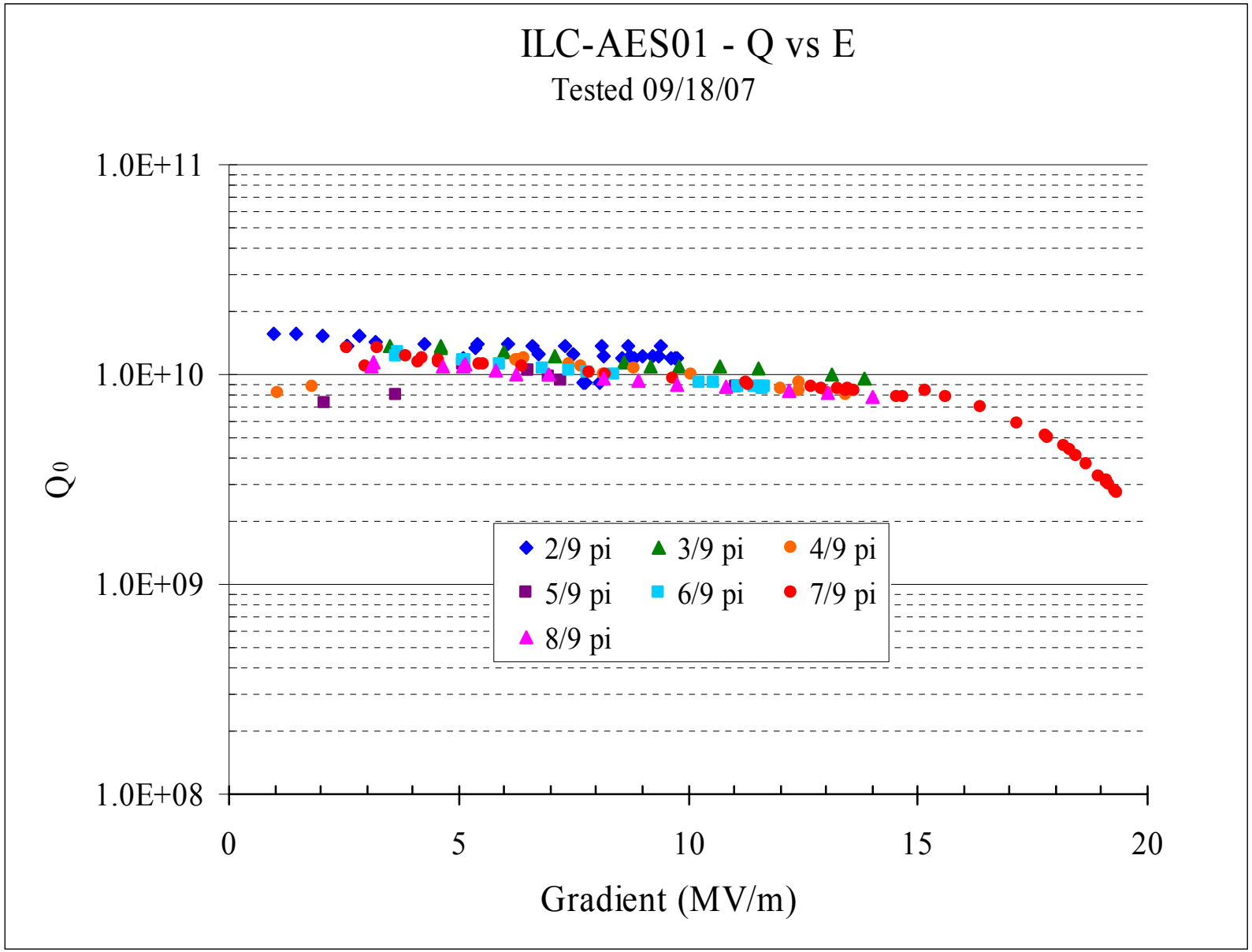
2nd Test Results



2nd Test Results



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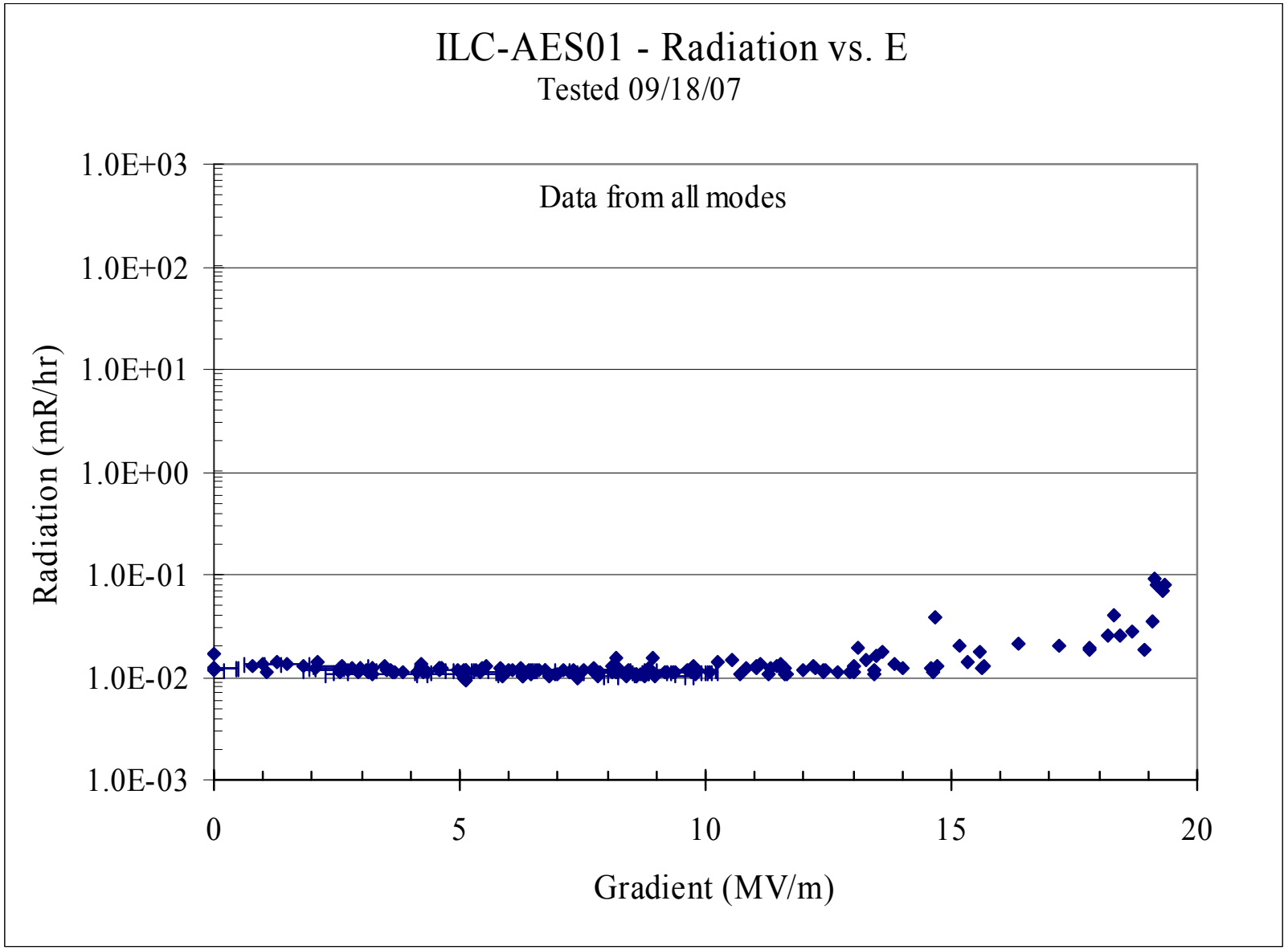
2nd Test Results



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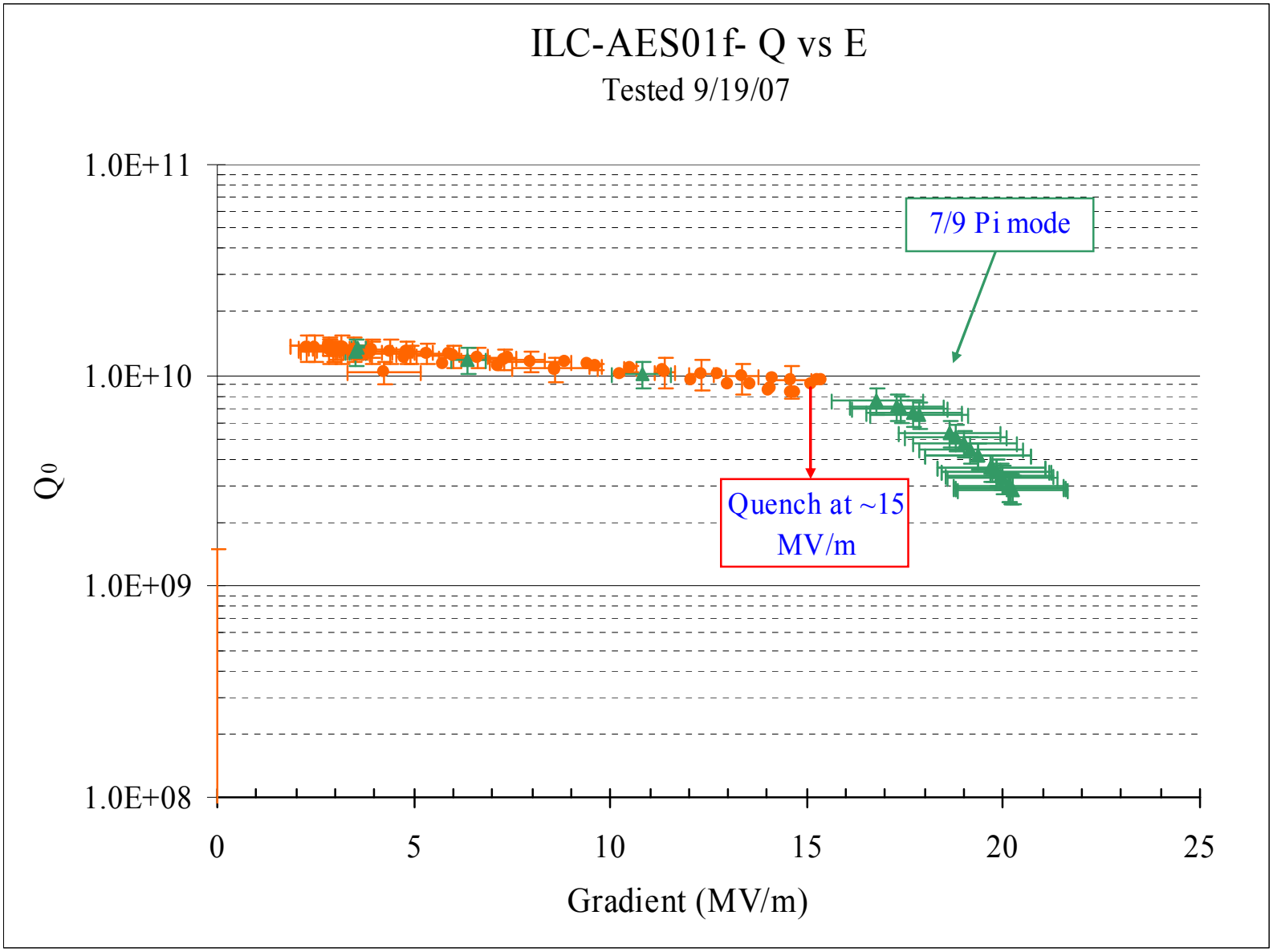
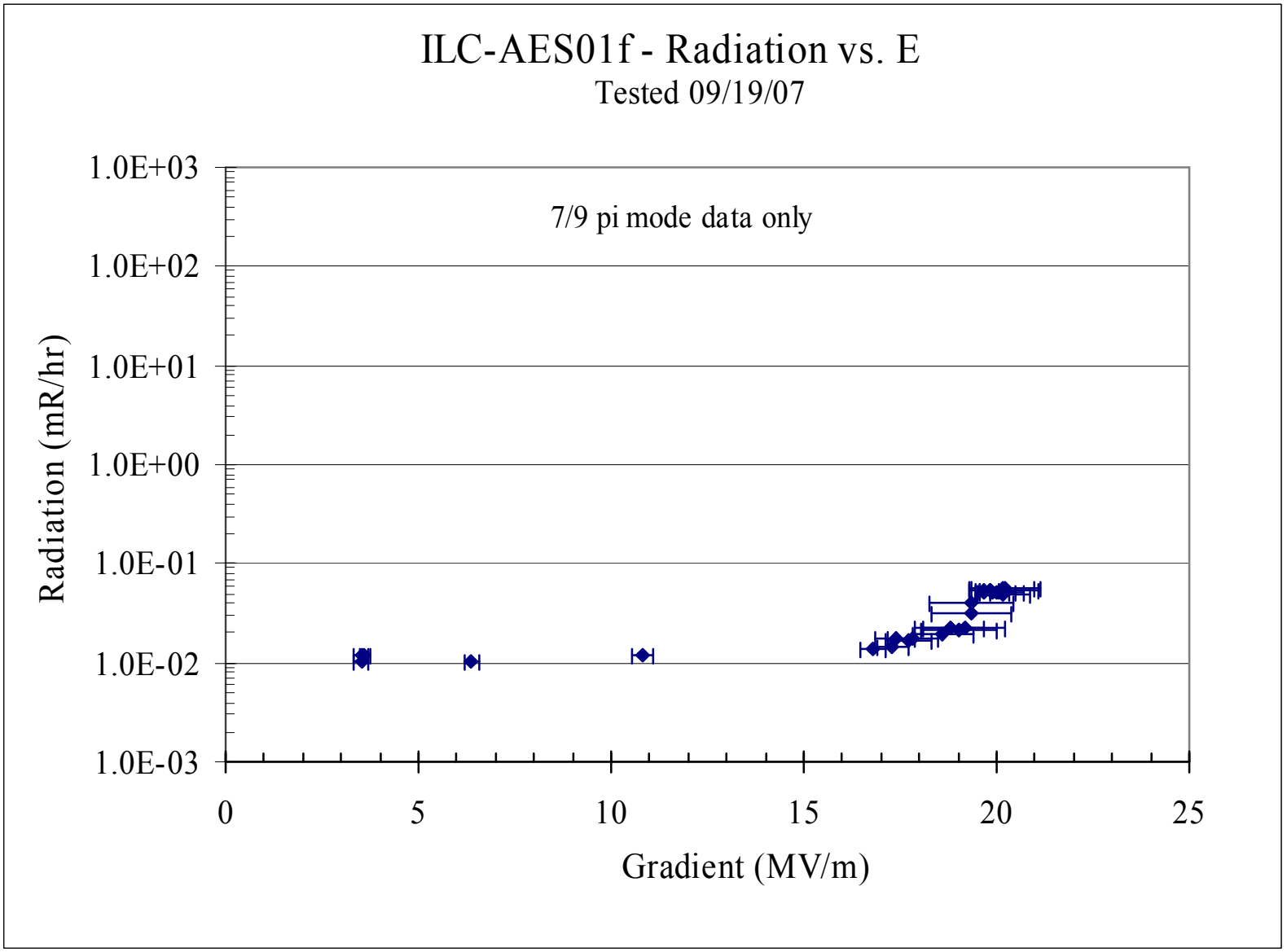
2nd Test Results



2nd Test Results



2nd Test Summary

- Reproducible hard quench limit in π-mode
- FE only in $7\pi/9$-mode, onset at equiv. gradient of 16MV/m
- Heating seen on several “flying” RTD’s located just above equator during quench (see Dmitri’s talk)
- Reproducible system operation

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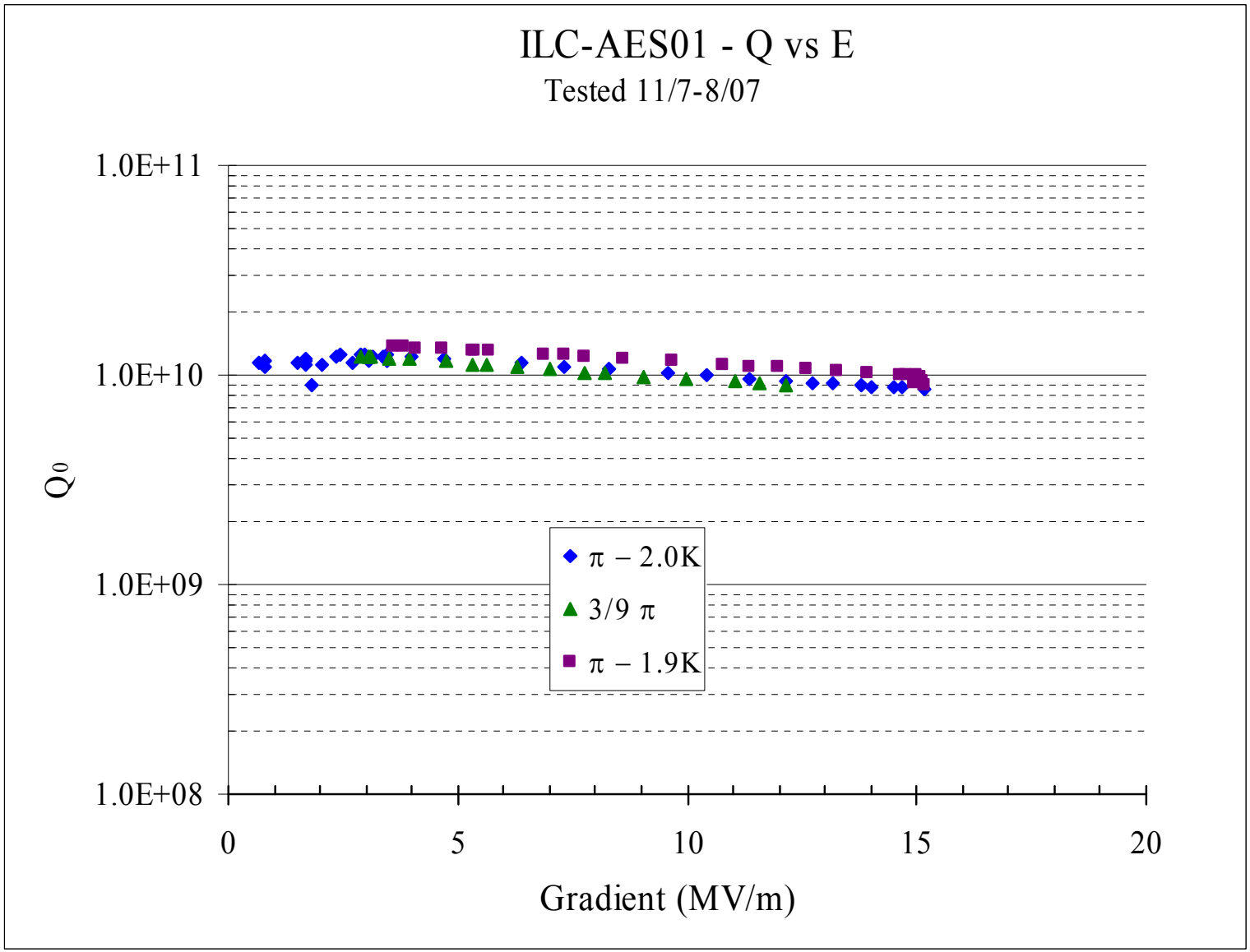
Dmitri will discuss thermometry results in detail…

3rd Test Results



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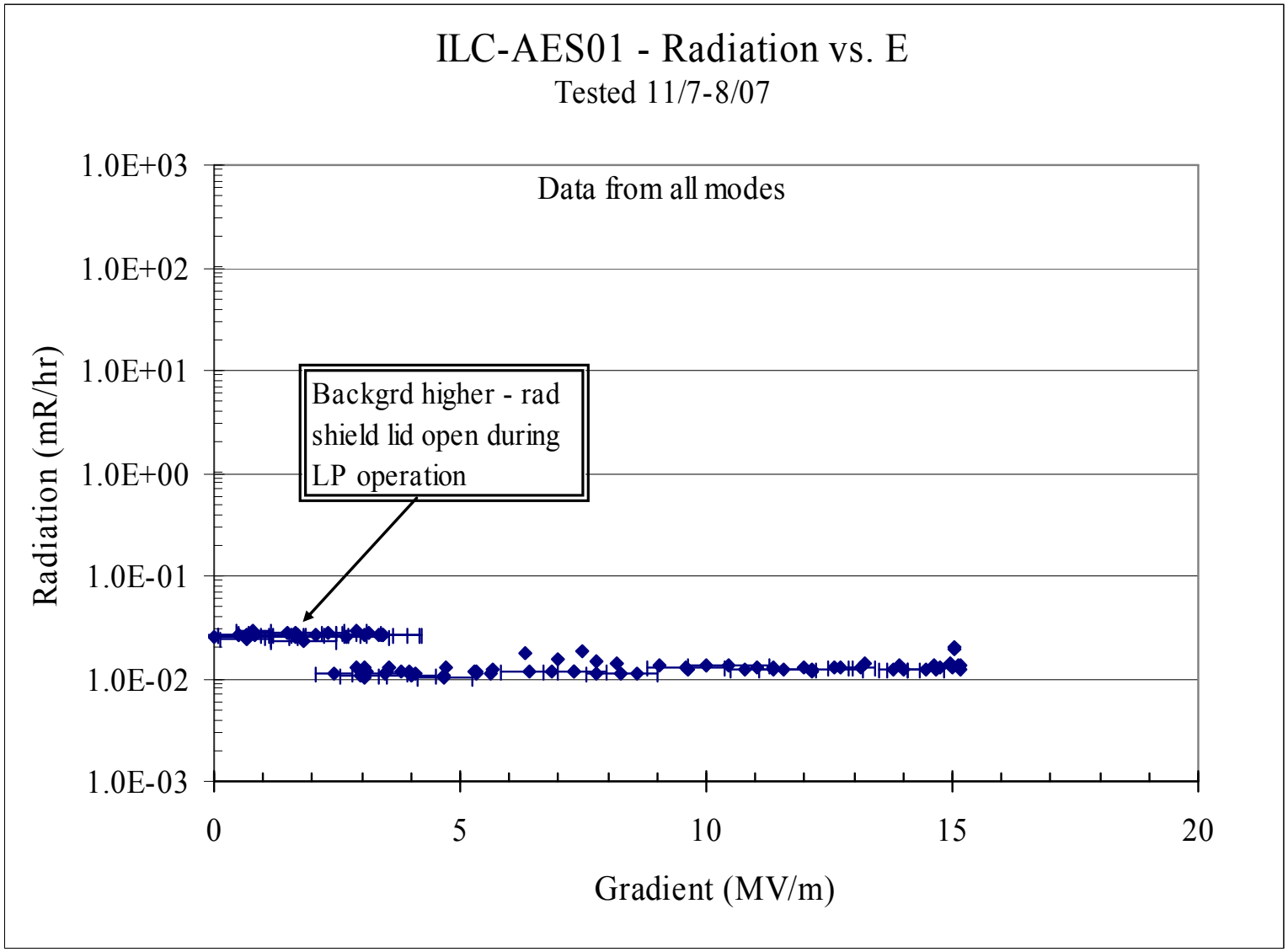
3rd Test Results



3rd Test Summary

- Looked at π and $3\pi/9$ (cells 2 & 8) modes. Hard quenches observed in both modes
- No FE in either mode
- Heating seen on cell 8 during quench in $3\pi/9$ mode (but no hot-spot growth - see Dmitri's talk)
- "Flying" sensors used for further localization efforts for quench origin on cell 7 (again, see Dmitri's talk)